

Remarks

Reconsideration of this Application is respectfully requested.

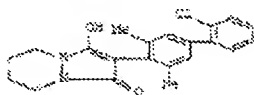
Upon entry of the foregoing amendment, claims 1-5, 14, and 25-27 are pending in the application, with claims 1 being the independent claim. Claims 6-13 and 15-24 are sought to be cancelled without prejudice to or disclaimer of the subject matter therein. New claims 25-27 are sought to be added. Support for new claims 25-27 is found at page 28, lines 20-23 and at pages 99-101 of the as-filed specification. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 103

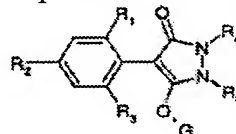
Claims 1-5 and 14 are rejected under 35 U.S.C 103(a) as unpatentable over Maetzke (CA 2 382 432 A1 "Maetzke"). Applicants respectfully traverse the rejection.

Applicant's amendment and arguments over rejected claims have been fully considered, but found not persuasive. Applicant's arguments are based primarily on the Court opinions in *Takeda v. Alphapharm* and *KSR Int'l v. Teleflex Inc.* Applicants argue that the Office is required to (1) identify some reason that would have led a person of ordinary skill in the art to select a particular compound as a 'lead compound' in the cited reference; and (2) show that a reason existed, based on what was known at the time of the invention, to perform the chemical modifications necessary to achieve the presently claimed compounds. See *Takeda v. Alphapharm*, at 1362-1363. Specifically, Applicants argue that the '973 compound

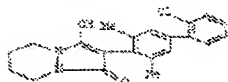
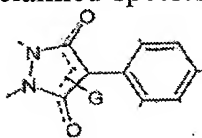


(CAS RN 329706-33-4) disclosed in the previous Office action **should not be** regarded as a 'lead compound', because Maetzke discloses thousands of potential compounds, and exemplifies

approximately 200 of those compounds. Maetzke, p. 49-67, Tables 1-7. However, only seven of which are compounds wherein R2 is a 2-halo-substituted phenyl. Furthermore, Maetzke discloses herbicidal testing data for 24 specific compounds, at p. 65, Table B2. However, nearly all of the 24 tested compounds are substituted at the R2 position with unsubstituted phenyl, yet none of the tested compounds are substituted at the R2 position with a 2-substituted phenyl. This argument is not persuasive. All the exemplified approximately 200 compounds are within the claimed



scope of invention of the formula (I). Even only 24 compounds are disclosed for its herbicidal activity that does not exclude the rest compounds to have the similar herbicidal activity, because it is not required for a patent application to disclose testing results of all the claimed species. All the tested compounds share the basic core structure



(CAS RN 329706-33-4)

Therefore, the previously cited '973 compound is an appropriate 'lead compound' to start with.

Next, Applicants argue that there was no reasonable expectation of success to perform the chemical modifications necessary to arrive at the presently claimed compounds. Specifically, Applicants argue that In *Takeda*, the court upheld a finding that "there was no reasonable expectation in the art that changing positions of a substituent on a pyridyl ring would result in beneficial changes." *Takeda*, at 1361. Furthermore, the court in *Takeda* reiterated that modern decisions have cautioned against finding a prima facie case of obviousness based on the generalization that structurally similar compounds are presumed to have similar properties. *Id.* Applicants' arguments are not persuasive for the following reasons:

1) The *Takeda* decision on nonobviousness was based on **two variations of a lead compound**: a change of the substituted location on the pyridyl ring from 5-position to 6-position (i.e. ring walking) **and** change substituents from ethyl group to methyl group. In contrast with the *Takeda* case, the **only** difference between prior art compound and the instant compound is the 'ring walking' from the *para*-position to the *meta*-position. The ring cores in the two formulae are the same. Furthermore, the *Takeda* decision on nonobviousness was based on the conclusion that

the selected lead **compound b** for antidiabetic research taught away from its use. As such, the court concluded that *Alphapharm* failed to make a *prima facie* case of obviousness. The court continued its analysis and found that even if *Alphapharm* succeeded in making a *prima facie* showing, *Taketa* would still prevail because any *prima facie* case of obviousness was rebutted by the unexpected results of pioglitazone's **nontoxicity**, see pages 1172-3 of the decision. It is very obvious that none of the *Taketa* situations fits into the instant rejection.

2) According to *KSR*, 'A person of ordinary skill in the art is also a person of ordinary creativity, not an automaton.' *KSR*, 550 U.S. at ___, 82 USPQ2d at 1397. '[I]n many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.' *Id.* Office personnel may also take into account 'the inferences and creative steps that a person of ordinary skill in the art would employ.' *Id.* at ___, 82 USPQ2d at 1396. In addition to the factors above, Office personnel may rely on their own technical expertise to describe the knowledge and skills of a person of ordinary skill in the art. The Federal Circuit has stated that examiners and administrative patent judges on the Board are 'persons of scientific competence in the fields in which they work' and that their findings are 'informed by their scientific knowledge, as to the meaning of prior art references to persons of ordinary skill in the art.' *In re Berg*, 320 F.3d 1310, 1315, 65 USPQ2d 2003, 2007 (Fed. Cir. 2003). As noted by the Court in *KSR*, '[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one', 550 U.S. at ___, 82 USPQ2d at 1396 (emphasis added)), or solves a problem which is different from that which the applicant was trying to solve, may also be considered for the purposes of 35 U.S.C. 103. (The Court in *KSR* stated that '[t]he first error in this case was holding that courts and patent examiners should look only to the problem the patentee was trying to solve. The Court of Appeals failed to recognize that the problem motivating the patentee may be only one of many addressed by the patent's subject matter. The second error [was].that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem.' 550 U.S. at ___, 82 USPQ2d at 1397. Federal Circuit case law prior to the Supreme Court's decision in *KSR* is generally in accord with these statements by the *KSR* Court. See e.g., *In re Dillon*, 919 F.2d 688, 693, 16 USPQ2d 1897, 1902 (Fed. Cir. 1990) (*en banc*) ('[I]t is not necessary in order to establish a *prima facie* case of obviousness that both a structural similarity between a claimed and prior art compound (or a key component of a composition) be shown and that there be a suggestion in or expectation from the prior art that the claimed compound or composition will have the same or a similar utility **as one newly discovered by applicant**'); *In re Lintner*, 458 F.2d 1013, 1018, 173 USPQ 560, 562 (CCPA 1972) ('The fact that [applicant] uses sugar for a

different purpose does not alter the conclusion that its use in a prior art composition would be *prima facie* obvious from the purpose disclosed in the references.').

Therefore, the Office has established *prima facie* case for obviousness over the prior art teachings. Accordingly, the rejection is maintained. If Applicants intend to overcome the *prima facie* obvious rejection by demonstrating the instantly claimed subject matter (with very limited scope) with unexpected results, an additional Declaration is required to cure the defect of the previous Declaration. Applicants also have to demonstrate the entire claimed scope is unexpected over the prior art teaching with side-by-side experimental comparison among the cited prior art compound and the instantly claimed species.

(Office Action, pages 2-7). Applicants respectfully disagree.

The Examiner has applied old case law on the subject of obviousness and structural similarity. The correct test is stated as follows:

When a patent claims a chemical compound, a *prima facie* case of obviousness under the third *Graham* factor frequently turns on the structural similarities and differences between the compounds claimed and those in the prior art. *In re Dillon*, 919 F.2d 688, 692 (Fed.Cir.1990) (en banc) ('This court ... reaffirms that structural similarity between claimed and prior art subject matter, proved by combining references or otherwise, where the prior art gives reason or motivation to make the claimed compositions, creates a *prima facie* case of obviousness.');

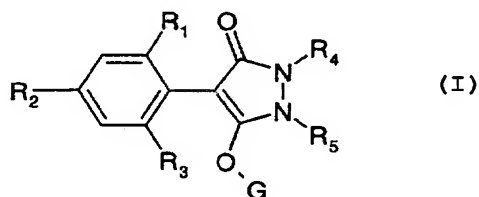
see also Eisai Co. Ltd. v. Dr. Reddy's Labs., Ltd., 533 F.3d 1353, 1356-57 (Fed.Cir.2008). Proof of obviousness based on structural similarity requires clear and convincing evidence that a medicinal chemist of ordinary skill would have been motivated to select and then to modify a prior art compound (e.g., a lead compound) to arrive at a claimed compound with a reasonable expectation that the new compound would have similar or improved properties compared with the old. Eisai, 533 F.3d at 1357; *Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350, 1356 (Fed.Cir.2007). In keeping with the flexible nature of the inquiry after *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S.Ct. 1727, 167 L.Ed.2d 705 (2007), the motivation to select and modify a lead compound need not be explicit in the art. Eisai, 533 F.3d at 1357; *Takeda*, 492 F.3d at 1356-57.

Daiichi Sankyo Company, Inc. v. Matrix Laboratories, Ltd., 619 F.3d 1346, 1352

(Fed. Cir. 2010) (emphasis added). There is no discussion in *Daiichi* whether there is

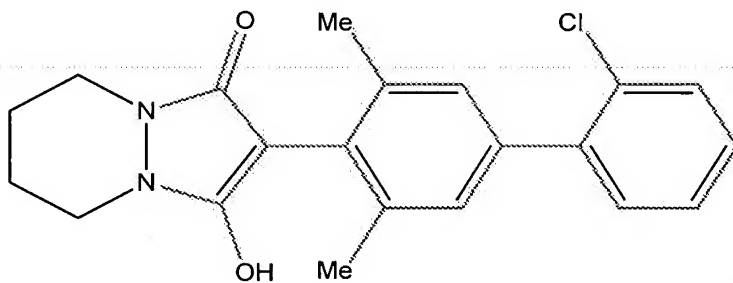
one versus two structural differences. The key issue is whether one of skill in the art would have selected a certain embodiment in the cited art as a "lead compound."

The Examiner has provided no evidence that the person of ordinary skill in the art would have selected compound I-b-40 from Maetzke as a lead compound. Maetzke provides many compounds of general formula (I):



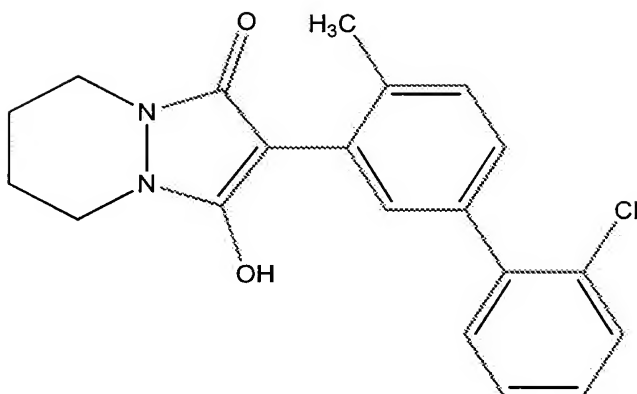
According to *Daiichi*, the Examiner must provide evidence that a person of ordinary skill in the art, examining Maetzke as a whole, would have chosen Compound I-b-40 as a lead compound from among hundreds of compounds in Maetzke.

Compound Ib-40 is the following compound:



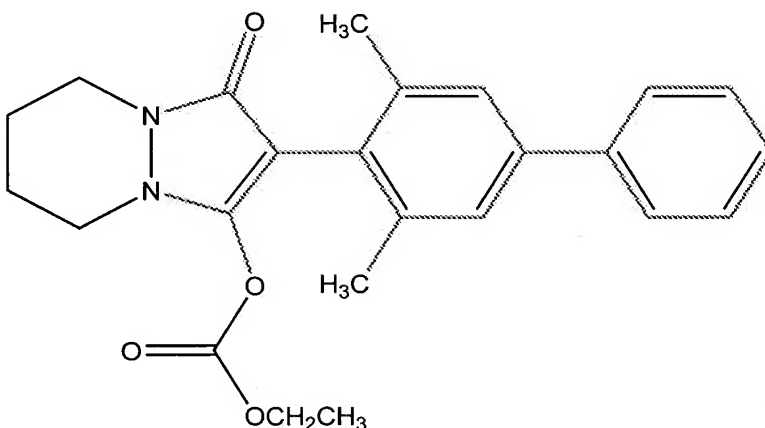
(Maetzke, page 55).

The elected species, compound (I-1-a-2), has the following structure:



Comparison of I-b-40 with elected species I-1-a-1 shows two differences: (a) the terminal phenyl group and the pyrazolidin-3,5-dione moiety are meta to each other; and (b) the central phenyl ring is substituted with *one* other group ortho to the pyrazolidin-3,5-dione moiety. The Examiner has not shown *any* evidence why the person of ordinary skill in the art would have chosen compound I-b-40 as a lead compound and made two significant structural changes to arrive at the elected species.

Reading Maetzke as a whole weighs against the Examiner's factual findings. First, Compound I-b-40 was never tested as a herbicide. (Maetzke, page 65). The most effective herbicide tested in Maetzke was Compound I-b-4, which has the following structure:



Furthermore, compounds 1b-7 and 1b-8 are the only synthesized compounds in Maetzke with one substituent ortho to the pyrazolidin-3,5-dione moiety. (Maetzke, page 54). Neither compound was tested as a herbicide, so it is unknown whether they should have been selected as the lead compound.

Maetzke provides no teaching or direction or suggestion to one of ordinary skill in the art to select compound I-b-40 as the lead compound and then modify it to arrive at the present invention. Therefore the Examiner has not established a *prima facie* case of obviousness.

Reconsideration and withdrawal of the rejection is respectfully requested.

Unexpected Results

Assuming, *arguendo*, the Examiner has established a *prima facie* case of obviousness, the unexpected herbicidal activity of compound I-1-a-2 provided in the attached sheet are sufficient to overcome the rejection.

Applicants submit herewith the unsigned Declaration of Isolde Haeuser-Hahn Under 37 C.F.R. § 1.132. Compound I-1-a-2, the elected species, and compound I-b-40 were applied at a rate of 320 grams per hectare in a pre-emergence herbicide test to compare their control of *Stellaria media*, *Lolium multiflorum*, *Amaranthus retroflexus*, and *Setaria viridis*.

Compared to compound I-b-40, compound I-1-a-2 provided unexpectedly superior control of these species in the test.

For these reasons, and the reasons as stated in Applicants' arguments regarding the Thielert Declaration, filed April 8, 2009, incorporated herein by reference and relied upon, Applicants respectfully request reconsideration and withdrawal of the rejection.

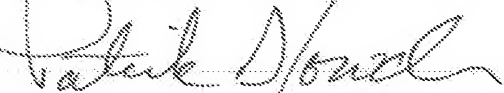
Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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